

## Keywords Lectures 1, 2, 3

### Lecture 1. Basic ideas of formal semantics

Formal semantics

The predicate calculus (PC) as a formal language

Syntax, semantics: what these terms mean in logic

Interpretation of an expression  $\alpha$  in a model  $M$  relative to an assignment  $g$ :  $\|\alpha\|^{M,g}$

Modifying an assignment function:  $g[d/x]$

The Principle of Compositionality

Model-theoretic semantics<sup>1</sup>

### Lecture 2. Model-theoretic semantics, lambdas, and NP semantics

Lexical ambiguity vs. structural ambiguity

Lambdas, the lambda-calculus, lambda-abstraction

Lambda-conversion

Types

Types  $e, t$ . Functional types  $\langle a, b \rangle$  or  $a \rightarrow b$ .

Functional application

Semantics for natural language by direct model-theoretic interpretation, or via translation into an intermediate logical language [more on this in lecture 3]

Montague's semantics for noun phrases like *John, every student, a student, the king*.

### Lecture 3. A Fragment of English. More applications of the lambda calculus.

"Fragment"

Syntactic categories and semantic types

Direct model-theoretic interpretation vs. interpretation via translation into IL

Syntactic and semantic rules. Abbreviated notations.

Type-driven translation.

Principles of type-driven translation: function-argument application, predicate conjunction (= predicate modification), identity.

Type multiplicity, type shifting

NPs as generalized quantifiers

Three types for NPs: referential, predicative, quantificational

Lexicon in Montague grammar: semantics of logical words

Three types for determiners corresponding to three types for NPs

Relative clauses, semantics of

Quantifying in

Conjunction: sentential and phrasal

Negation: sentential, phrasal and lexical

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<sup>1</sup> Note: most formal semantics *is* model-theoretic, but it is possible in principle to have formal semantics that is not model-theoretic, if it is formal and explicitly provides truth-conditions for sentences, but not relative to models. Non-model-theoretic approaches are advocated by Donald Davidson, and by Larson, Richard, and Gabriel Segal. 1995. *Knowledge of Meaning: An Introduction to Semantic Theory*. Cambridge, MA: MIT Press.